REMARKS/ARGUMENTS

1.) Specification Amendments

The Applicants have amended the specification to add section headings in accordance with 37 C.F.R. 1.77. Approval of the specification is respectfully requested.

2.) Claim Amendments

The Applicants have amended claims 1-3, 6, 7, 9-11, 15, 17, and 18; claims 4, 5, 8, 14, 16, and 19-34 have been canceled; and claims 35-49 have been added. Accordingly, claims 1-3, 6, 7, 9-13, 15, 17, 18, and 35-49 are pending in the application. Favorable reconsideration of the application is respectfully requested in view of the foregoing amendments and the following remarks.

3.) Examiner Objections

In paragraph 1 of the Office Action, the Examiner objected to the Abstract due to its content and excessive length. The Applicants have amended the Abstract for content and to reduce the length to 150 words or less. Approval of the amended abstract is respectfully requested.

In paragraph 2 of the Office Action, the Examiner objected to claim 26 due to a typographical error. Claim 26 has been canceled.

4.) Claim Rejections – 35 U.S.C. § 112

In paragraphs 3-4 of the Office Action, the Examiner rejected claims 1-34 under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter of the invention. The Examiner stated that the claims were generally indefinite, with many § 112 problems throughout, and provided examples in claims 2, 8, 15, 18, 31, and 34. The Applicants have amended claims 1-18 to correct the § 112 problems. Claims 19-34 have been canceled and replaced by new claims 35-47. The Examiner's consideration of the amended and new claims is respectfully requested.

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5.)   Claim Rejections – 35 U.S.C. § 103(a)

In paragraphs 5-6 of the Office Action, the Examiner rejected claims 1-8 and 19-26 under 35 U.S.C. § 103(a) as being obvious over Applicant's admitted prior art (hereinafter AAPA) in view of Chapman (US 6,493,316). The Examiner stated that AAPA teaches dividing data into packets, the use of acknowledgments, a data loss detection mechanism that searches for duplicate acknowledgments and uses a timeout feature, and a window-based flow control procedure that uses multiple modes. The Examiner contends that Chapman shows the use of these features operating together. The Applicants have amended the claims to better distinguish the claimed invention from AAPA and Chapman. The Examiner's consideration of the amended claims is respectfully requested.

As indicated in the Background section of the present application, the prior art systems and methods described by the Applicants suffer from the problem that they always respond in the same way to a potential data loss, namely by assuming that the data loss is due to congestion. Therefore, the response measures are designed to address only the problem of congestion in the network. Typically, this involves reducing the data rate. However, if the loss is actually due to excessive delay rather than congestion, reducing the data rate will only exacerbate the situation. A better response may be to increase the timeout period. However, nothing in the prior art teaches or suggests a system or method in which the response procedure is selectively chosen based on a determination of whether the potential data loss is due to congestion or excessive delay.

Amended claim 1 recites a method of controlling a data unit oriented communication between a sender and a receiver operating in accordance with a predetermined communication protocol. The sender divides an amount of data to be sent into a plurality of data units having a structure determined by the protocol, and transmits initial data units to the receiver. The receiver acknowledges correct receipt of the initial data units by returning acknowledgment data units to the sender. When a failure of the receiver to receive at least one data unit is detected, the sender retransmits the data unit that the receiver failed to receive. If the sender then receives an acknowledgment data unit indicating that the data unit was correctly received by the

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receiver, it is determined whether the received acknowledgment data unit indicates that the data unit was correctly received as a result of the transmitting step or as a result of the retransmitting step. The sender then subsequently transmits subsequent data units in accordance with a flow control procedure conducted on the basis of at least one adaptive parameter. This includes performing an excessive delay response procedure if the received acknowledgment data unit indicates that the at least one data unit was correctly received as a result of the transmitting step. However, if the received acknowledgment data unit indicates that the at least one data unit was correctly received as a result of the retransmitting step, a data unit loss response procedure is performed instead. In this way, a flexible response is provided to potential data loss events.

Thus, amended claim 1 recites a flexible method that determines whether a correctly received data unit was received as a result of an original transmission attempt, or as a result of a retransmission, and based on this determination, selectively performs either an excessive delay response procedure or a data unit loss response procedure. The Applicants contend that a flexible method such as that recited in amended claim 1 is not taught or suggested by AAPA or Chapman. Chapman discloses a window-based flow control procedure, but does not teach or suggest the flexible method of claim 1. Therefore, the allowance of amended claim 1 is respectfully requested.

Claims 4, 5, and 8 have been canceled. Therefore, claims 2, 3, 6, and 7 depend from amended claim 1 and recite further limitations in combination with the novel elements of claim 1. Therefore, the allowance of claims 2, 3, 6, and 7 is respectfully requested.

Independent claim 19 has been canceled and replaced by new claim 35. Claim 35 recites a device for controlling a data unit oriented communication between a sender and a receiver operating in accordance with a predetermined communication protocol. The device includes means in the sender for dividing an amount of data to be sent into a plurality of data units having a structure determined by the protocol; a data unit transmitter that transmits the data units from the sender to the receiver; and means in the receiver for acknowledging correct receipt of the transmitted data units by returning acknowledgment data units to the sender. A data loss detection mechanism detects a

failure of the receiver to receive at least one data unit, and a retransmission means in the sender then retransmits the at least one data unit that the receiver failed to receive. Receiving means in the sender may subsequently receive an acknowledgment data unit indicating that the at least one data unit was correctly received by the receiver, and a determining means then determines whether the received acknowledgment data unit indicates that the at least one data unit was correctly received as a result of the transmitting step or as a result of the retransmitting step. The transmission means also includes means for subsequently transmitting subsequent data units utilizing a flow control procedure conducted on the basis of at least one adaptive parameter. The subsequent transmission means includes an excessive delay response mechanism that performs an excessive delay response procedure in response to the determining means determining that the received acknowledgment data unit indicates that the at least one data unit was correctly received as a result of the transmitting step. The subsequent transmission means also includes a data unit loss response mechanism that performs a data unit loss response procedure in response to the determining means determining that the received acknowledgment data unit indicates that the at least one data unit was correctly received as a result of the retransmitting step.

Thus, claim 35 recites a device corresponding to the flexible method of amended claim 1. The Applicants, therefore, respectfully request the allowance of claim 35 for the same reasons as discussed above for amended claim 1.

Claims 36-39 relate to original claims 20-26. Claims 36-39 depend from new claim 35 and recite further limitations in combination with the novel elements of claim 35. Therefore, the allowance of claims 36-39 is respectfully requested.

In paragraph 7 of the Office Action, the Examiner rejected claims 9-14 and 27-30 under 35 U.S.C. § 103(a) as being obvious over AAPA in view of Chapman and further in view of Miller, et al. (US 6,247,058). The Examiner states that AAPA and Chapman show the claimed invention except for marking the data units to distinguish between an acknowledgment of an originally sent data unit and an acknowledgment of a retransmitted data unit. The Examiner contends that Miller teaches distinguishing data units in a similar environment by time stamping them. The Applicants respectfully disagree, and further contend that the amended/new claims in this response distinguish

the claimed invention from AAPA, Chapman, and Miller. The Examiner's consideration of the amended/new claims is respectfully requested.

Miller discloses using time stamps to identify stale packets, which can then be discarded to conserve bandwidth and/or buffer memory space. (See Abstract). However, there is no teaching or suggestion in Miller of using time stamps to mark the data units to distinguish between an acknowledgment of an originally sent data unit and an acknowledgment of a retransmitted data unit. In the claimed invention, the sender includes a time stamp in a given data unit indicating the time the given data unit was sent, and the receiver then includes the time stamp contained in the given data unit in the acknowledgment data unit associated with the given data unit. There is no teaching or suggestion in Miller of transferring a time stamp from a transmitted data unit to an acknowledgment data unit, and there is no suggestion in AAPA, Chapman, and Miller of then using the transferred time stamp to selectively perform either an excessive delay response procedure or a data unit loss response procedure, as recited in base claims 1 and 35.

Claim 14 has been canceled. Claims 9-13 depend from amended claim 1 and recite further limitations in combination with the novel elements of claim 1. Therefore, the allowance of claims 9-13 is respectfully requested.

Claims 27-30 have been canceled. New claims 40-44 relate to original claims 27-30. Claims 40-44 depend from new claim 35 and recite further limitations in combination with the novel elements of claim 35. Therefore, the allowance of claims 40-44 is respectfully requested.

In paragraph 8 of the Office Action, the Examiner rejected claims 15-18 and 31-34 under 35 U.S.C. § 103(a) as being obvious over AAPA in view of Chapman and Miller, and further in view of Phillips (US 6,118,765). The Examiner states that AAPA, Chapman, and Miller teach the claimed invention except for choosing the adaptive parameters based on the time period between the retransmission of the data unit and receipt of an acknowledgment for the data unit. The Examiner contends that Phillips teaches estimating a round trip time (RTT) based on this value. The Applicants contend that the amended/new claims in this response distinguish the claimed invention from

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AAPA, Chapman, Miller, and Phillips. The Examiner's consideration of the amended claims is respectfully requested.

Before addressing this rejection, the Applicants note that Phillips was not submitted by the Applicant, and was also not included with the Office Action or listed on the PTO-892 Notice of References Cited. The Applicants respectfully request that an additional PTO-892 be issued, which lists US 6,118,765 to Phillips as a reference.

Although Phillips discloses using estimated round trip times to eliminate unnecessary retransmissions, the combination of Phillips with AAPA, Chapman, and Miller does not teach or suggest the claimed invention because, as noted above, AAPA, Chapman, and Miller do not teach the other aspects of the claimed invention. In particular, there is no suggestion in AAPA, Chapman, or Miller of selectively performing either an excessive delay response procedure or a data unit loss response procedure, depending on whether an acknowledgment data unit is determined to be associated with an original transmission or a retransmission of a data unit, as recited in base claims 1 and 35.

Claim 16 has been canceled. Claims 15, 17, and 18 depend from amended claim 1 and recite further limitations in combination with the novel elements of claim 1. Therefore, the allowance of claims 15, 17, and 18 is respectfully requested.

Claims 31-34 have been canceled. New claims 45-47 relate to original claims 31-34. Claims 45-47 depend from new claim 35 and recite further limitations in combination with the novel elements of claim 35. Therefore, the allowance of claims 45-47 is respectfully requested.

In paragraph 9 of the Office Action, the Examiner rejected claims 1 and 19 under 35 U.S.C. § 103(a) as being obvious over AAPA in view of Ramakrishnan (WO 98/37670). The Examiner stated that AAPA teaches the invention of claims 1 and 19 except for two different modes for adapting a parameter, which are adjusted to deal with the flow control. The Examiner contends this is shown by Ramakrishnan. The Applicants have amended the claims to better distinguish the claimed invention from AAPA and Ramakrishnan. The Examiner's consideration of the amended claims is respectfully requested.

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Ramakrishnan discloses the use of selective acknowledgments (SACKs) to detect data loss. The SACKs utilize a specific symbol to identify the data packet that was lost or received with an error. The identified data packet is retransmitted each time its identifying symbol is received in a SACK. However, there is no teaching or suggestion of a mechanism or method that changes flow control parameters for the retransmission. In particular, there is no teaching or suggestion of selectively utilizing either a data loss response procedure, or an excessive delay response procedure, as claimed by the Applicants. In fact, Ramakrishnan teaches away from such a solution by expressly reciting that a congestion mechanism is always utilized, regardless of the number of unsuccessful retransmissions for a given packet. (Page 12, lines 2-6).

Claim 19 has been canceled and replaced by new claim 35. Amended claim 1 and new claim 35 recite that either an excessive delay response procedure or a data unit loss response procedure is selectively performed, depending on whether an acknowledgment data unit is determined to be associated with an original transmission or a retransmission of a data unit. There is no suggestion in AAPA or Ramakrishnan of this combination of features. Therefore, the allowance of claims 1 and 35 is respectfully requested.

6.)   Claims 48 and 49

Claim 48 recites an improved method of controlling a data unit oriented communication in which the improvement comprises selecting by the response procedure, a mode for adapting the one or more adaptive parameters of the flow control procedure. The mode is selected from at least two different modes, and is selected based on one or more acknowledgment data units received by the sender after having re-sent a given data unit. As noted above, the prior art does not teach or suggest a method in which the flow control procedure is selectively adapted based on one or more acknowledgment data units received by the sender after re-sending a given data unit. Therefore, the allowance of claim 48 is respectfully requested. Claim 49 depends from claim 48 and adds the further limitation that the two modes relate to a congestion response mode and an excessive delay response mode. The allowance of claim 49 is respectfully requested.
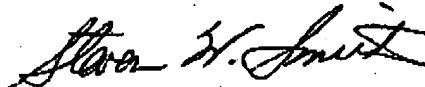
CONCLUSION

In view of the foregoing remarks, the Applicants believe all of the claims currently pending in the Application to be in a condition for allowance. The Applicants, therefore, respectfully request that the Examiner withdraw all rejections and issue a Notice of Allowance for claims 1-3, 6, 7, 9-13, 15, 17, 18, and 35-49.

The Applicants request a telephonic interview if the Examiner has any questions or requires any additional information that would further or expedite the prosecution of the Application.

Respectfully submitted,

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